CENTRAL INTELLIGENCE AGENCY

REPORT

## INFORMATION REPORT

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SUBJECT

Technical Inspection of Soviet X-Ray Tube Elements

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- 1. The elements were identified as from oil-cooled X-ray tubes useful for general diagnostic purposes. Russian data captured with the equipment indicates that the tubes were of 70 cm focal length and operated at potentials up to 80 kilowith. The capacity of the tubes is estimated at approximately 20 to 30 milliamperes.
- 2. Inspection of the X-ray tube elements has revealed the following:
  - a. Shortness of the made necks indicates that the tubes were oil-cooled in spite of the presence of "radiators" such as are found on aircooled tubes. While such radiators are unnecessary, they are often found on oil-cooled tubes. Moreover, equipment for oil-cooling was found with the tubes.
  - The sealing collars appeared to be of a chrome iron alloy such as is found on European tubes, and indicates that a soft glass envelope was used instead of a hard glass envelope as is produced by the Machlett Laboratories.
  - The cathodes were crudely made both as to machining and glass work, but appeared workable.
  - The anodes were of copper with a well-placed focal spot of good quality tungsten in each.
    - The tungsten was embedded in copper, which in turn was jacketed in steel. While steel jacketing is not unheard of, it is no longer widely used because it may introduce metallic impurities and tends to rust.
    - In many X-ray tubes the copper around the tungsten focal spot tends to crack. The anodes examined showed no copper cracks and this was considered to be indicative of engineering competence.
- 3. From this inspection the following conclusions are drawn:

The X-ray tubes were comparable to low-quality cheap tubes of U.S.A production.

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- b. The X-ray tubes showed reasonable competence on the part of their producers and were of the kind usually produced to meet a price by manufacturers of considerable tube making ability.
- c. The steel jacketing on the anode is considered to represent inferior practice; it may have been used to diffuse heat, thus preventing cracks in the anode copper, or it may have been used in molding the copper and simply not removed before assembling the tubes.
- d. Inspection has revealed no unusual features warranting further analysis.

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